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Mapping Digital-Era Indonesian Character: A Bibliometric Analysis of Research on National Identity, Technology, and Future Governance (2020 – 2025)

Ali Anhar Syi'bul Huda*, **Aghnia**, **Abid Nurhuda**, **Walid In'am Ahmad**, **and Hamdi**

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Research Article

Mapping Digital-Era Indonesian Character: A Bibliometric Analysis of Research on National Identity, Technology, and Future Governance (2020–2025)

Ali Anhar Syi'bul Huda*, Aghnia, Abid Nurhuda, Walid In'am Ahmad, and Hamdi

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Abstract

This study maps research on Indonesian character in the digital era to clarify how national identity, technology, and future governance are connected in the literature. A bibliometric design was applied to Crossref metadata retrieved through Publish or Perish. From 1,000 records published between 2020 and 2025, 402 records met the predefined relevance and metadata criteria. Annual production, document sources, leading contributors, and term co-occurrence were analysed in VOSviewer 1.6.20. Publication output increased from 65 records in 2020 to a peak of 85 in 2023, before declining to 37 in 2025. Scientific journals accounted for 49.3% of the corpus. Term mapping retained 104 terms and identified four connected clusters: moral and personal formation, civic-pedagogical capacity, rights and institutions, and development and welfare. The least dense areas concerned democratic institutions, welfare, human development, health, and regional inequality. The study's contribution is a future-governance interpretation of character research: digital citizenship, ethical AI use, and human-centred public innovation should be studied as integral, rather than peripheral, dimensions of Indonesian character.

Keywords: Bibliometric Analysis; Digital Citizenship; Future Governance; Indonesian Character; Pancasila; VOSviewer.

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INTRODUCTION

Digital transformation changes not only institutional processes but also the habits through which citizens create, evaluate, and circulate knowledge. For this reason, questions of national character increasingly intersect with human-centred artificial intelligence (AI), data ethics, and the accountability of digital systems [1], [2], [3], [4]. In public settings, AI adoption can affect service access, administrative discretion, and the distribution of risks; its consequences therefore require attention to social values as well as technical performance [5], [6], [7], [8].

Digital citizenship provides a useful bridge between individual character and technologically mediated public life. It encompasses critical participation, responsibility, respect for others, ethical information use, and the capacity to engage in digital environments without harming rights or social cohesion [9], [10], [11]. These capabilities are related to broader twenty-first-century digital skills, but they cannot be reduced to operational proficiency alone [12].

In Indonesia, character is conventionally connected to Pancasila, the country's five-principle philosophical foundation, and to cultural practices such as mutual cooperation (gotong royong). Recent Indonesian scholarship has examined Pancasila-related research, the relationship between religious and general knowledge, sustainability-oriented character formation, cultural differences across regions, and the relevance of adat (customary) norms and human rights [13], [14], [15], [16], [17]. However, this knowledge base remains dispersed across education, religion, sociology, communication, law, economics, and technology studies.

The fragmentation matters because Indonesia's digital transformation is uneven. Research on mobile connectivity indicates that access can expand rapidly while inequalities in use, capability, and benefit persist [18], [19]. International work similarly demonstrates that cultural variation shapes moral expectations and social coordination [20], [21], while studies of autonomous systems show that judgments about fairness and accountability are socially consequential [22], [23]. A comprehensive mapping is therefore needed to determine whether research on Indonesian character has incorporated the technological and governance issues that will shape civic life in the coming decade.

The present study responds to this need by mapping publications on modern Indonesian character from 2020 to 2025. Rather than treating character solely as a school-based outcome, the analysis reads it as a multi-level construct linking personal formation, civic capacity, institutions, and welfare in a digital society. This framing aligns character research with current debates on AI-supported learning, responsible innovation, and generative AI governance [24], [25], [26], [27]. The study asks: (RQ1) How did publication output develop during 2020–2025? (RQ2) Which document sources and contributors shaped the field? (RQ3) What thematic clusters structure the literature? and (RQ4) Which low-density areas indicate a future research agenda?

LITERATURE REVIEW

Digital-Era Character, Digital Citizenship, and Human-Centred AI

Character in a digital society should be understood as a capacity to make responsible judgments while interacting with people, information, and automated systems. This perspective extends conventional moral education by incorporating digital citizenship, critical information evaluation, privacy awareness, and the ability to question algorithmic outcomes. Educational AI research shows that AI can support personalization and feedback, but it can also reproduce bias, narrow learner

agency, or obscure accountability when its use is not governed transparently [24], [25], [26], [27]. Accordingly, a future-oriented character agenda must connect ethical dispositions with socio-technical competence.

Indonesian Character as Cultural, Civic, and Institutional Capacity

In the Indonesian context, Pancasila offers a normative language for connecting individual conduct with collective obligations. The construct also intersects with Islamic Religious Education (IRE), civic education, local wisdom, and the Pancasila Student Profile, which seeks to develop learners who are ethical, collaborative, creative, independent, and able to reason critically. The literature cited in this study indicates that the field has substantially discussed values, schooling, morality, and religious formation [13], [14], [15], [16], [17]. Yet a technology-sensitive interpretation is needed because the social consequences of digital services, platform infrastructures, and AI-supported decision-making are mediated by cultural expectations, civic rights, and institutional trust [5], [6], [7], [8].

Bibliometric Mapping as an Integrative Review Strategy

Bibliometric analysis is appropriate when a field is dispersed across publication outlets and disciplines because it can combine performance indicators with science-mapping techniques. Well-established guidance recommends a transparent search, data-cleaning protocol, clear methodological choices, and cautious interpretation of network visualizations [28], [29], [30], [31]. Although this study is not a systematic review of intervention effects, its record-selection workflow is reported using PRISMA-informed principles of transparency [32]. The approach is especially appropriate for the present purpose: it permits a reproducible description of research structure while avoiding unsupported claims about the social effectiveness of the mapped studies.

METHODS

Research Design and Data Source

This study used a quantitative bibliometric design. The bibliographic corpus was retrieved in March 2026 from Crossref through Publish or Perish and covered publications dated from January 2020 through December 2025. Crossref was selected because it offers openly retrievable scholarly metadata, including titles, publication venues, author information, and Digital Object Identifiers (DOIs). However, bibliographic databases differ in coverage and metadata completeness; the resulting map should therefore be interpreted as a Crossref-based representation of the field, not as a census of all global publications [33], [34], [35], [36], [37], [38], [39].

Search Strategy, Eligibility, and Data Cleaning

The working search expression was ("Indonesia*" OR "Indonesian") AND ("character" OR "national character" OR "character education" OR "modern society"). The search was applied through the Publish or Perish Crossref connector and examined titles, abstracts where available, and author keywords. Records were eligible when they addressed Indonesian character, national identity, character education, Pancasila values, or closely related social themes; were published in 2020–2025; and contained essential bibliographic metadata. Records were excluded when they were duplicates, incomplete, outside the substantive focus, or unrelated to social-character themes. The search retrieved 1,000 records; 402 were retained after screening. Because the original export did

not preserve a disaggregated log of each exclusion type, this manuscript reports only the verifiable aggregate exclusion count (n = 598) and does not fabricate category-level screening totals.

Bibliometric Procedures and Quality Safeguards

The cleaned records were exported in RIS format and analysed in VOSviewer version 1.6.20. Analysis included annual publication output, document-source distribution, descriptive contributor mapping, and term co-occurrence. For term mapping, binary counting and a minimum occurrence threshold of 10 were applied. The original VOSviewer workflow produced 363 candidate terms, retained 218 terms after a 60% relevance selection, and retained 104 substantively relevant terms after semantic verification. The term map was interpreted through network, overlay, and density views. VOSviewer and bibliometrix are established tools for this purpose; in this study, VOSviewer was used for mapping and all numerical summaries were checked against the original validated corpus [29], [30], [38]. Generative AI was used only to assist preliminary metadata familiarization; final inclusion, category checking, interpretation, and manuscript decisions were performed by the authors.

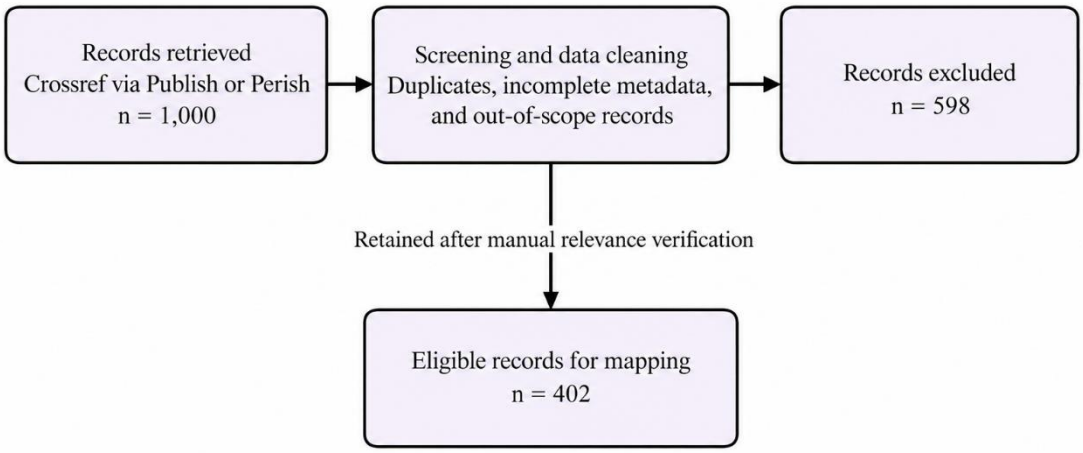

Figure 1. Data Retrieval and Screening Workflow.

RESULTS AND DISCUSSION

Dataset Formation and Annual Publication Pattern

The final corpus contained 402 publications. Table 1 shows that the retained output was stable at 65 records in 2020 and 2021, rose to 75 in 2022, and peaked at 85 in 2023. The 2024 count was 75, followed by 37 in 2025. The peak year represented 21.1% of the full corpus, whereas 2025 represented 9.2%. The pattern indicates that research attention intensified through 2023; nevertheless, the lower count in 2025 should not be read as evidence of a substantive decline because metadata deposit, indexing timing, and the search configuration can affect late-period visibility.

Table 1. Annual Record Disposition and Eligible Publication Output, 2020–2025.

Year	Retrieved	Excluded	Eligible	Eligible (%)
2020	170	105	65	16.2
2021	150	85	65	16.2
2022	180	105	75	18.7
2023	200	115	85	21.1
2024	170	95	75	18.7
2025	130	93	37	9.2
Total	1,000	598	402	100.0

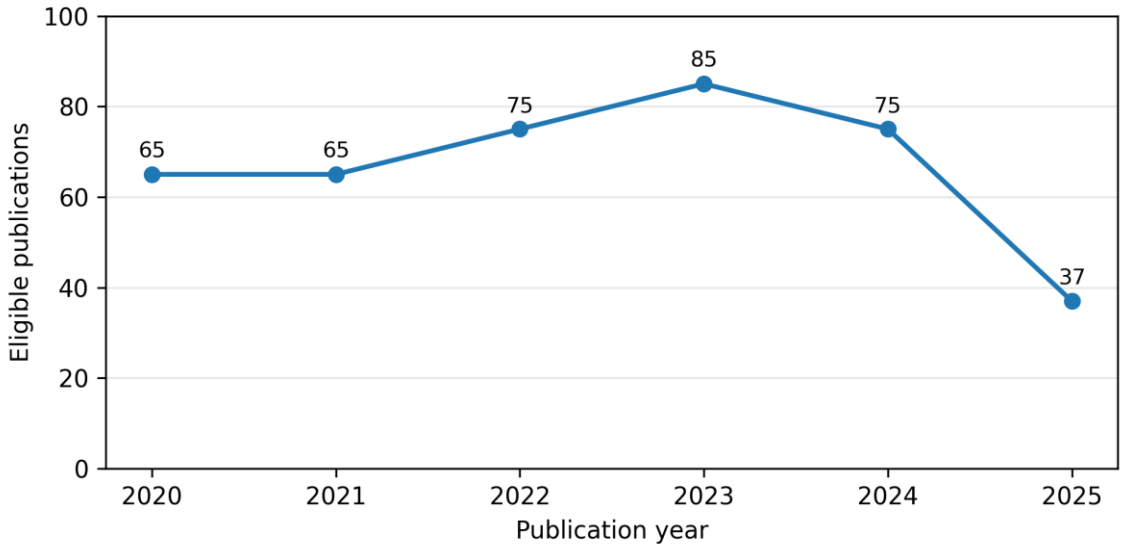

Figure 2. Annual Distribution Of Eligible Publications.

The annual profile also has an interpretive implication. The rise from 65 to 85 records coincides with the post-pandemic acceleration of digital platforms, educational technology, and policy interest in human-centred innovation. The corpus therefore provides a useful window into how Indonesian character scholarship responded to a period in which social interaction, learning, and public communication were increasingly digitized.

Document-Source Structure

Scientific journals were the largest publication source, accounting for 198 records (49.3%). Conference proceedings were the second-largest source (76 records; 18.9%), followed by academic reports (52; 12.9%), e-books (41; 10.2%), academic theses (23; 5.7%), and other forms (12; 3.0%). This distribution shows that the field is actively disseminated through peer-reviewed journals while remaining connected to professional, institutional, and postgraduate research channels. The mix also cautions against treating journal output alone as a complete indicator of the knowledge base, especially in a topic that crosses formal education, civic practice, and policy-oriented inquiry.

Table 2. Distribution Of Eligible Publications By Document Source.

Document Source	N	%
Scientific journals	198	49.3
Conference proceedings	76	18.9

Document Source	N	%
Academic reports	52	12.9
E-books	41	10.2
Academic theses	23	5.7
Other publication forms	12	3.0
Total	402	100.0

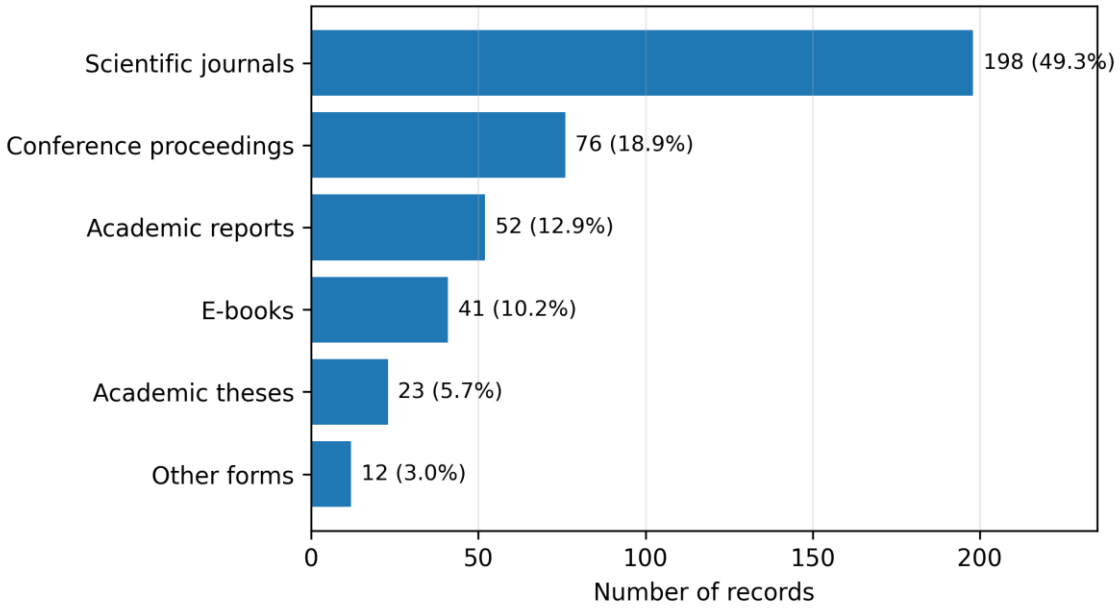

Figure 3. Distribution Of Eligible Publications By Document Source.

Leading Contributors in the Mapped Corpus

The author map displayed five contributors with the highest document counts in the validated corpus. Dinie Anggraeni Dewi appeared in five records; Muslikh, Michael Reskiantio Pabubung, Mas Fierna Janvierna Lusie Putri, and Moh. Ulum each appeared in four records. These counts describe visible productivity within the extracted corpus only. They should not be interpreted as a ranking of scholarly impact because the study did not perform author-name disambiguation, citation analysis, or institutional-network analysis. The sparse visual connections in the original map further suggest that research is dispersed among small contributor groupings rather than consolidated in a single dominant collaboration network.

Table 3. Leading Contributors Displayed In The Original Author Map.

Contributor	Mapped documents (n)
Dinie Anggraeni Dewi	5
Muslikh	4
Michael Reskiantio Pabubung	4
Mas Fierna Janvierna Lusie Putri	4
Moh. Ulum	4

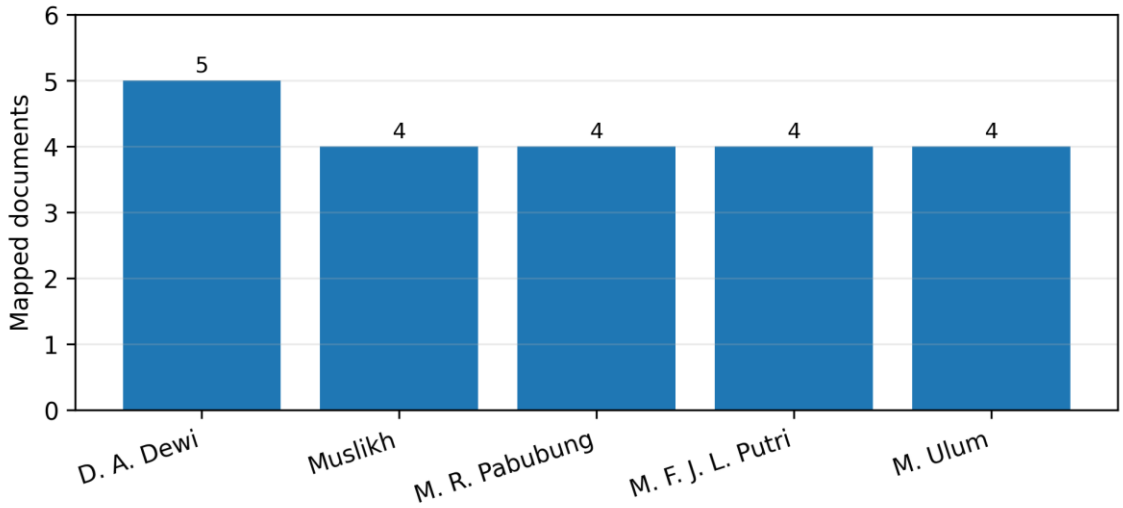

Figure 4. Leading Contributors By Number Of Mapped Documents.

Thematic Structure of Co-Occurring Terms

The term-analysis pipeline retained 104 substantively relevant terms from 218 automatically selected terms. The retained terms formed four clusters. Cluster 1 (36 terms) focused on moral and personal formation, combining behaviour, discipline, faith, integrity, family, honesty, and moral value. Cluster 2 (28 terms) captured civic-pedagogical capacity through Pancasila, education, school, teachers, responsibility, technology, cooperation, and character values. Cluster 3 (22 terms) addressed rights and institutional order, bringing together constitution, democracy, law, justice, protection, human rights, violence, and women. Cluster 4 (18 terms) linked character to development and welfare through economic growth, poverty, health, the human development index, population, region, and welfare.

Table 4. Thematic Clusters Derived From The 104 Selected Co-Occurring Terms.

Cluster	Terms (n)	Interpretive label	Illustrative terms
1	36	Moral and personal formation	Behaviour; discipline; faith; integrity; family; honesty; moral value
2	28	Civic-pedagogical capacity	Pancasila; education; teacher; school; responsibility; technology; cooperation
3	22	Rights and institutions	Constitution; democracy; law; justice; protection; human rights; violence
4	18	Development and welfare	Economic growth; poverty; health; HDI; population; region; welfare

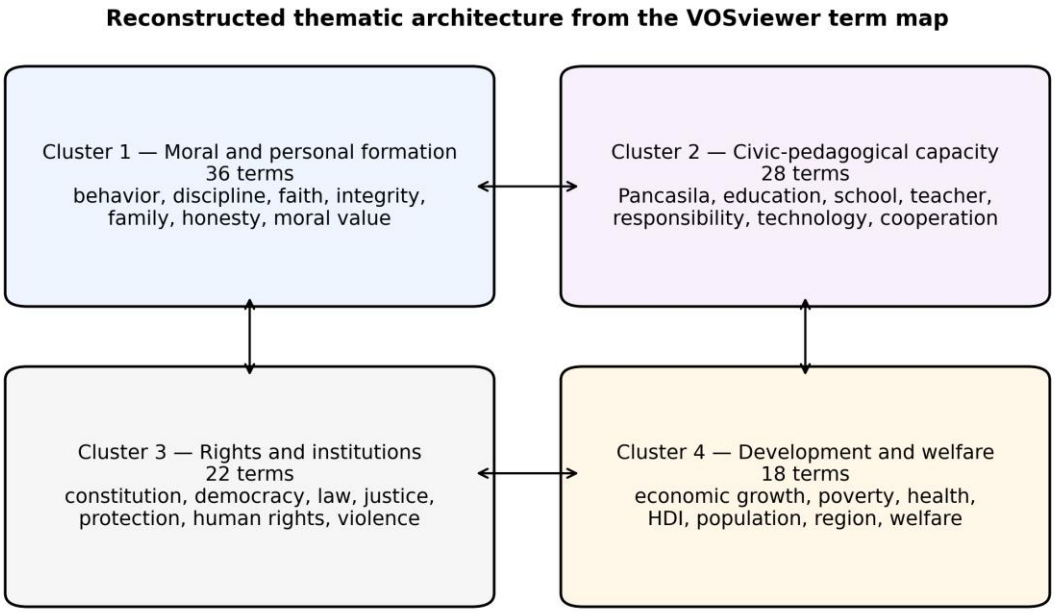

Figure 5. Thematic Architecture Reconstructed From The Original Vosviewer Term Map (N = 104 Selected Terms).

Temporal Signals and Frontier Agenda

The overlay visualization positioned constitution, principle, phenomenon, opportunity, welfare, nature, quality, Islamic teaching, moral value, discipline, students, and responsibility among the more recent or salient terms around 2023. This observation is descriptive: the original visualization supports a temporal reading of term prominence, but it does not test statistical growth or causal influence. The density visualization simultaneously showed comparatively low attention to democracy, law, government, welfare, poverty, human development, regional differences, health, population, human resources, and compassion. These low-density areas form a coherent frontier because they connect individual character to the public institutions and socioeconomic conditions that structure real digital participation.

Table 5. High-Density And Low-Density Thematic Areas Identified From The Original Density Visualization.

Map signal	Representative terms	Interpretive implication
High-density / established	Moral values; discipline; Pancasila; character education; students; responsibility	A mature emphasis on value formation and educational practice.
Emerging / temporally salient	Constitution; principle; opportunity; welfare; quality; Islamic teaching	An expanding connection between character, institutions, social quality, and normative frameworks.
Low-density / frontier	Democracy; law; government; poverty; HDI; regional inequality; health; population; human resources; compassion	Promising areas for research on digital citizenship, AI governance, welfare, and equitable innovation.

Discussion

The results reveal that research on Indonesian character is not a single educational domain. The four-cluster structure spans personal morality, civic-pedagogical practice, institutional rights, and development outcomes. This is important because a narrow school-centred reading cannot explain the ethical questions created by platform economies, automated decision systems, and AI-enabled public services. The field's dominant cluster around values, discipline, faith, and integrity confirms that moral formation remains a core concern. However, the simultaneous presence of clusters on law, democracy, welfare, and human development shows that character is also being treated—often implicitly—as a question of how people participate in institutions and benefit from societal transformation.

The prominence of the civic-pedagogical cluster provides an entry point for digital citizenship. The co-occurrence of Pancasila, education, responsibility, cooperation, and technology suggests that Indonesian scholarship is beginning to position character as a capability for responsible participation in a networked society. This is consistent with digital citizenship research, which frames responsible online engagement as a combination of critical judgment, ethical conduct, participation, and respect for rights [9], [10], [11]. It also aligns with the evidence that digital skills include information management, communication, collaboration, creativity, and problem solving rather than mere device operation [12]. The practical implication is that the Pancasila Student Profile and Islamic Religious Education (IRE) should explicitly address algorithmic awareness, misinformation resilience, privacy, digital empathy, and the ethical use of generative AI.

The result that development and welfare formed a separate, smaller cluster is particularly consequential. Character scholarship often foregrounds individual virtues, while the density analysis indicates less attention to poverty, regional inequality, health, human development, and government. This is a missed opportunity. Digital participation is conditioned by unequal access, use, and outcomes; Indonesian mobile internet research and wider digital-divide scholarship show that connectivity does not automatically produce equivalent capability or benefit [18], [19]. A future research agenda should therefore examine how unequal digital infrastructures shape the possibility of practising civic responsibility, accessing educational opportunities, and participating in AI-mediated services across regions and demographic groups.

The institutional cluster sharpens the journal-level relevance of this study. Democracy, constitutional rights, public policy, and law should not be treated as peripheral to character research in the era of AI. Human-centred AI scholarship emphasizes transparency, accountability, contestability, and value-sensitive design [1], [2], [3], [4]. Public-sector research likewise demonstrates that AI implementation introduces governance challenges involving stakeholder conflict, policy-cycle redesign, and organizational change [5], [6], [7], [8]. Thus, the novelty of the present mapping is not merely the identification of four themes. It is the interpretation of their intersection as a future-governance agenda: Indonesian character research can provide the cultural and ethical vocabulary needed to assess whether AI and digital innovation strengthen, rather than weaken, civic agency and social justice.

This contribution also refines how Pancasila can be operationalized in digital research. Rather than invoking Pancasila only as a general moral aspiration, future studies can translate its principles into testable socio-technical constructs: fairness and non-discrimination in AI systems, deliberative participation in digital policy, protection of personal data and dignity, equitable access to learning technologies, and collective responsibility for misinformation harms. Such

operationalization would connect local normative resources with the international AI ethics literature while avoiding the assumption that a universal framework automatically captures Indonesian cultural conditions. Cross-cultural research shows that norms of coordination and moral expectation vary meaningfully across societies [20], [21], and AI morality research demonstrates that human judgments about automated systems are sensitive to social context [22], [23].

The findings have three practical implications. First, for researchers, mixed-method designs are needed to move from thematic mapping to evidence on mechanisms: surveys and experiments can assess digital citizenship and AI literacy, while interviews and ethnography can examine how values are interpreted in different communities. Second, for education leaders, curriculum and teacher development should connect character education to data literacy, verification practices, online care, and responsible AI use. The research on AI in education warns that adoption without pedagogical and ethical safeguards can shift agency away from educators and learners [24], [25], [26], [27]. Third, for policymakers and technology developers, participatory governance and locally grounded evaluation should be built into the design of digital public services. These steps would make innovation more responsive to diverse user experiences, including communities with weaker connectivity or limited institutional voice.

This study also advances bibliometric practice by reporting the dataset boundaries openly. The Crossref source and 402-record corpus allow a transparent view of the retrieved literature but do not substitute for Scopus, Web of Science, Dimensions, or other databases. Database selection can change the visible structure of a field because coverage, citation capture, and metadata quality differ [33], [34], [35], [36], [37], [38], [39]. The present study therefore should be read as a carefully delimited map, not as a universal estimate of all character-related scholarship. Its value lies in combining verifiable descriptive results with a theoretically grounded agenda for human-centred digital transformation.

CONCLUSION

This bibliometric study mapped 402 Crossref-indexed publications on Indonesian character from 2020 to 2025. The literature grew to a peak in 2023 and was disseminated predominantly through scientific journals. Term co-occurrence revealed four connected knowledge domains: moral and personal formation, civic-pedagogical capacity, rights and institutions, and development and welfare. The central contribution is a future-governance interpretation of these results. Character research should expand beyond value transmission by investigating digital citizenship, responsible AI use, institutional accountability, digital inequality, and welfare outcomes. This shift would enable Indonesian normative resources, including Pancasila, to inform human-centred digital innovation while remaining empirically testable and policy relevant.

LIMITATIONS

The study has four limitations. First, the corpus was retrieved solely from Crossref and therefore may omit records indexed only in Scopus, Web of Science, Dimensions, national repositories, or non-DOI sources. Second, the original screening log retained only the aggregate exclusion count, preventing a fully disaggregated flow diagram. Third, author-name disambiguation and citation-impact analysis were not performed; contributor counts must therefore be read descriptively. Fourth, term co-occurrence identifies thematic proximity, not causal relations, study quality, or policy

effectiveness. Future research should triangulate multiple databases, publish the cleaned metadata and thesaurus, use independent screeners, and combine bibliometric mapping with systematic review, content analysis, or empirical field studies.

AUTHOR INFORMATION

Corresponding Author

Ali Anhar Syi'bul Huda – Islamic Religious Education Teacher, Sekolah Medengah Pertama Negeri 3 Lembang (Indonesia);
orcid.org/0000-0003-2611-1422
Email: alianhar99@upi.edu

Authors

Ali Anhar Syi'bul Huda – Islamic Religious Education Teacher, Sekolah Menegah Pertama Negeri 3 Lembang (Indonesia);
orcid.org/0000-0003-2611-1422
Aghnia – Master's Program in Elementary Education, Universitas Pendidikan Indonesia (Indonesia);
orcid.org/0000-0002-3995-5539
Abid Nurhuda – Doctoral Program in Qur'anic Studies and Exegesis, Universitas PTIQ Jakarta (Indonesia);
orcid.org/0009-0001-5176-1665
Walid In'am Ahmad – Doctoral Program in Islamic Economics, Universitas Islam Negeri Sunan Ampel Surabaya (Indonesia);
orcid.org/0009-0009-5456-7225
Hamdi – Master's Program in Islamic Education, Universitas Islam Negeri Palangkaraya (Indonesia);
orcid.org/0009-0007-4685-7893

AUTHOR CONTRIBUTION

A.A.S.H. conceptualized the study, designed the bibliometric protocol, conducted data screening and analysis, interpreted the results, and drafted the manuscript. A. contributed to the literature synthesis, abstract development, and language refinement. A.N. supported the search strategy, metadata verification, and conceptual framing. W.I.A. contributed to the interpretation of governance and economic implications and critically revised the manuscript. H. contributed to methodological checking, final editing, and manuscript preparation. All authors reviewed and approved the final manuscript and accept responsibility for its content

CONFLICT OF INTEREST

"The Authors Declare No Conflict of Interest."

DECLARATION OF USE OF AI IN SCIENTIFIC WRITING

Generative AI was used only as an assistive tool for preliminary metadata familiarization and language refinement. It was not used to generate, alter, or fabricate bibliometric data. All screening decisions, analyses, interpretations, citations, and final manuscript content were verified and approved by the authors.

REFERENCES

[1] L. Floridi *et al*., "AI4People—An ethical framework for a good AI society: Opportunities, risks, principles, and recommendations," *Minds and Machines*, vol. 28, pp. 689–707, 2018. https://doi.org/10.1007/s11023-018-9482-5

[2] A. Jobin, M. Ienca, and E. Vayena, "The global landscape of AI ethics guidelines," *Nature Machine Intelligence*, vol. 1, pp. 389–399, 2019. https://doi.org/10.1038/s42256-019-0088-2

[3] B. D. Mittelstadt, "Principles alone cannot guarantee ethical AI," *Nature Machine Intelligence*, vol. 1, pp. 501–507, 2019. https://doi.org/10.1038/s42256-019-0114-4

[4] T. Hagendorff, "The ethics of AI ethics: An evaluation of guidelines," *Minds and Machines*, vol. 30, pp. 99–120, 2020. https://doi.org/10.1007/s11023-020-09517-8

[5] B. W. Wirtz, J. C. Weyerer, and C. Geyer, "Artificial intelligence and the public sector—Applications and challenges," *International Journal of Public Administration*, vol. 42, no. 7, pp. 596–615, 2019. https://doi.org/10.1080/01900692.2018.1498103

[6] T. Q. Sun and R. Medaglia, "Mapping the challenges of artificial intelligence in the public sector: Evidence from public healthcare," *Government Information Quarterly*, vol. 36, no. 2, pp. 368–383, 2019. https://doi.org/10.1016/j.giq.2018.09.008

[7] D. Valle-Cruz *et al*., "Assessing the public policy-cycle framework in the age of artificial intelligence: From agenda-setting to policy evaluation," *Government Information Quarterly*, vol. 37, no. 4, Art. no. 101509, 2020. https://doi.org/10.1016/j.giq.2020.101509

[8] N. Haug, S. Dan, and I. Mergel, "Digitally-induced change in the public sector: A systematic review and research agenda," *Public Management Review*, vol. 26, no. 7, pp. 1963–1987, 2024. https://doi.org/10.1080/14719037.2023.2234917

[9] M. Choi, "A concept analysis of digital citizenship for democratic citizenship education in the Internet age," *Theory & Research in Social Education*, vol. 44, no. 4, pp. 565–607, 2016. https://doi.org/10.1080/00933104.2016.1210549

[10] L. M. Jones and K. J. Mitchell, "Defining and measuring youth digital citizenship," *New Media & Society*, vol. 18, no. 9, pp. 2063–2079, 2016. https://doi.org/10.1177/1461444815577797

[11] M. Choi, M. Glassman, and D. Cristol, "What it means to be a citizen in the Internet age: Development of a reliable and valid digital citizenship scale," *Computers & Education*, vol. 107, pp. 100–112, 2017. https://doi.org/10.1016/j.compedu.2017.07.002

[12] E. van Laar, A. J. A. M. van Deursen, J. A. G. M. van Dijk, and J. de Haan, "The relation between 21st-century skills and digital skills: A systematic literature review," *Computers in Human Behavior*, vol. 72, pp. 577–588, 2017. https://doi.org/10.1016/j.chb.2017.03.010

[13] A. A. S. H. Huda *et al*., "Merawat Ke-Indonesiaan melalui penguatan dan pengembangan isu Kepancasilaan: Tinjauan analisis bibliometrik terhadap publikasi penelitian tahun 2020–2025," *At-Tazakki*, vol. 9, no. 2, pp. 156–182, 2025. https://doi.org/10.47006/attazakki.v9i2.26831

[14] A. A. S. H. Huda *et al*., "Reorientasi dikotomis ilmu agama dan umum melalui pendekatan analisis bibliometrik," *Kamaya*, vol. 7, no. 2, pp. 155–168, 2024. https://doi.org/10.37329/kamaya.v7i2.3219

[15] A. Amran *et al*., "Implementation of education for sustainable development to enhance Indonesian golden generation character," *Journal of Physics: Conference Series*, vol. 1521, no. 4, Art. no. 042102, 2020. https://doi.org/10.1088/1742-6596/1521/4/042102

[16] R. Setyaningrum, A. R. Wijaya, and S. Subagyo, "The characteristics of society in Indonesian based on the Hofstede cultural dimensions: Measuring the five Indonesian islands," *International Journal of Culture and Art Studies*, vol. 6, no. 1, pp. 60–74, 2022. https://doi.org/10.32734/ijcas.v6i1.8720

[17] I. K. Ardhana and N. W. R. N. Puspitasari, "Adat law, ethics, and human rights in modern Indonesia," *Religions*, vol. 14, no. 4, Art. no. 443, 2023. https://doi.org/10.3390/rel14040443

[18] L. Puspitasari and K. Ishii, "Digital divides and mobile Internet in Indonesia: Impact of smartphones," *Telematics and Informatics*, vol. 33, no. 2, pp. 472–483, 2016. https://doi.org/10.1016/j.tele.2015.11.001

[19] A. J. A. M. van Deursen and J. A. G. M. van Dijk, "The digital divide shifts to differences in usage," *New Media & Society*, vol. 16, no. 3, pp. 507–526, 2014. https://doi.org/10.1177/1461444813487959

[20] M. Muthukrishna *et al*., "Beyond Western, educated, industrial, rich, and democratic (WEIRD) psychology," *Nature Human Behaviour*, vol. 4, pp. 1171–1181, 2020. https://doi.org/10.1038/s41562-020-0910-6

[21] M. J. Gelfand *et al*., "Differences between tight and loose cultures: A 33-nation study," *Science*, vol. 332, no. 6033, pp. 1100–1104, 2011. https://doi.org/10.1126/science.1197754

[22] E. Awad *et al*., "The Moral Machine experiment," *Nature*, vol. 563, pp. 59–64, 2018. https://doi.org/10.1038/s41586-018-0637-6

[23] I. D. Raji *et al*., "Closing the AI accountability gap: Defining an end-to-end framework for internal algorithmic auditing," in *FAT*, 2020, pp. 33–44. https://doi.org/10.1145/3351095.3372873

[24] O. Zawacki-Richter *et al*., "Systematic review of AI applications in higher education," *Int. J. Educ. Technol. Higher Educ.*, vol. 16, 2019. https://doi.org/10.1186/s41239-019-0171-0

[25] F. Ouyang and P. Jiao, "Artificial intelligence in education: The three paradigms," *Computers and Education: Artificial Intelligence*, vol. 2, 2021. https://doi.org/10.1016/j.caeai.2021.100020

[26] Y. K. Dwivedi *et al*., "So what if ChatGPT wrote it?," *International Journal of Information Management*, vol. 71, 2023. https://doi.org/10.1016/j.ijinfomgt.2023.102642

[27] E. Kasneci *et al*., "ChatGPT for good?," *Learning and Individual Differences*, vol. 103, 2023. https://doi.org/10.1016/j.lindif.2023.102274

[28] P. Donthu *et al*., "How to conduct a bibliometric analysis," *Journal of Business Research*, vol. 133, pp. 285–296, 2021. https://doi.org/10.1016/j.jbusres.2021.04.070

[29] J. A. Moral-Muñoz *et al*., "Software tools for bibliometric analysis," *Profesional de la Información*, vol. 29, no. 1, e290103, 2020. https://doi.org/10.3145/epi.2020.ene.03
[30] N. J. van Eck and L. Waltman, "VOSviewer software survey," *Scientometrics*, vol. 84, no. 2, pp. 523–538, 2010. https://doi.org/10.1007/s11192-009-0146-3
[31] I. Zupic and T. Čater, "Bibliometric methods in management," *Organizational Research Methods*, vol. 18, no. 3, pp. 429–472, 2015. https://doi.org/10.1177/1094428114562629
[32] M. J. Page *et al*., "PRISMA 2020 statement," *BMJ*, vol. 372, n71, 2021. https://doi.org/10.1136/bmj.n71
[33] M. Gusenbauer and N. R. Haddaway, "Academic search systems," *Research Synthesis Methods*, vol. 11, no. 2, pp. 181–217, 2020. https://doi.org/10.1002/jrsm.1378
[34] A. Martín-Martín *et al*., "Comparison of citation databases," *Journal of Informetrics*, vol. 12, no. 4, pp. 1160–1177, 2018. https://doi.org/10.1016/j.joi.2018.09.002
[35] M. Thelwall, "Dimensions database," *Journal of Informetrics*, vol. 12, no. 2, pp. 430–435, 2018. https://doi.org/10.1016/j.joi.2018.03.006
[36] M. Mongeon and A. Paul-Hus, "Scopus vs Web of Science," *Scientometrics*, vol. 106, pp. 213–228, 2016. https://doi.org/10.1007/s11192-015-1765-5
[37] A.-W. Harzing and S. Alakangas, "Google Scholar comparison," *Scientometrics*, vol. 106, pp. 787–804, 2016. https://doi.org/10.1007/s11192-015-1798-9
[38] M. Aria and C. Cuccurullo, "bibliometrix R tool," *Journal of Informetrics*, vol. 11, no. 4, pp. 959–975, 2017. https://doi.org/10.1016/j.joi.2017.08.007
[39] J. Baas *et al*., "Scopus as bibliometric data source," *Quantitative Science Studies*, vol. 1, no. 1, pp. 377–386, 2020. https://doi.org/10.1162/qss_a_00019